Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	591	(anelliptical or anisotropy or anisotropic) near2 parameter$1	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/06/15 08:43
L2	27296	seismic	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/06/15 08:43
L3	67	1 and 2	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/06/15 08:43
L4	201745	inversion or invert	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/06/15 08:43
L5	41	3 and 4	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/06/15 09:00
L6	283	367/50-52.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/06/15 09:30
L7	4	1 and 6	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/06/15 09:05
L8	45	(dls or damped adj1 least adj1 squares) adj1 (inversion or inverted or invert)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/06/15 09:10
L9	1	(3 or 6) and 8	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/06/15 09:06
L10	1	(dls or damped adj1 least adj1 squares) adj1 (inversion or inverted or invert) same seismic	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/06/15 09:10
L11	672	702/14.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/06/15 09:30

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Query/Command : file tulsa

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Search statement   1
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Query/Command : anisotropy or anisotropic

Frequency	Term
9801	ANISOTROPY
3767	ANISOTROPIC

**** SS 1: Results 10.319**

Search statement 2

Query/Command : (anisotropy parameter) or (anisotropic parameter)

Frequency	Term
9801	ANISOTROPY
19087	PARAMETER
3767	ANISOTROPIC
19087	PARAMETER

**** SS 2: Results 112**

Search statement 3

Query/Command : inversion or invert

Frequency	Term
14565	INVERSION
848	INVERT

**** SS 3: Results 14.975**

Search statement 4

Query/Command : 2 and 3

**** SS 4: Results 50**

Search statement 5

Query/Command : interval

**** SS 5: Results 21.163**

Search statement 6

Query/Command : 5 and 6

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  Frequency   Term
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**** SS 6: Results 1.485**

Search statement 7

Query/Command : his

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  File : TULSA

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   4        50  2 AND   3
   5     21163  INTERVAL
   6      1485  5 AND 6

  Search statement   7
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Query/Command : 4 and 5

**** SS 7: Results 24**

Search statement 8

Query/Command : PRT SS 7 MAX 1

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Accession Number :

860639

Title :

SEISMIC DATA PROCESSING IN TRANSVERSELY ISOTROPIC MEDIA: A PLANE WAVE APPROACH

Author :

MUKHERJEE, A

Organiz. Source :

TEXAS UNIV, AUSTIN

Source :

PHD THESIS, 2002; DISS ABSTR INT, SECT B V 64, NO 12, PP 5982-B - 5983-B, JUNE 2004 (ORDER NO DA3115507; 175 PP; ABSTRACT ONLY) (AO)

Numbers :

ISSN 04194217

Language :

ENGLISH; (ENG)

Document Type :

(T) THESIS

Index Terms :

SEISMIC DATA PROCESSING*; ANISOTROPY*; CALCULATING*; DATA PROCESSING*; INTERVAL VELOCITY*; ISOTROPY*; MATHEMATICAL ANALYSIS*; MATHEMATICS*; NUMERICAL INVERSION*; SEISMIC VELOCITY*; SEISMIC VELOCITY COMPUTATN*; SIMULATED ANNEALING METHOD*; VELOCITY*; VELOCITY ANISOTROPY*; WAVE VELOCITY*; ATLANTIC OCEAN; COMMON DEPTH POINT METHOD; COMPARISON; COMPRESSIONAL WAVE VELOCIT; COMPUTING; CORRECTION; DATA; DEPTH MEASURING; DISPERSION (WAVE); DOMAIN; ELLIPSE; EXPLORATION; FERMATS PRINCIPLE; FINITE DIFFERENCE METHOD; FOURIER ANALYSIS; GEOPHYSICAL EXPLORATION; IMAGING; INTERACTIVE INTERPRETATION; INTERPRETATION; MARINE EXPLORATION; MEASURING; MEXICO GULF; MIGRATION; MIGRATION (SEISMIC); MOVEOUT; NONLINEAR; NORMAL MOVEOUT; NORMAL MOVEOUT CORRECTION; NUMERICAL ANALYSIS; PARAMETER; PERTURBATION; PERTURBATION THEORY; PHASE VELOCITY; PLANE WAVE; RAY METHOD; RAY PATH; SEAS AND OCEANS; SEISMIC EXPLORATION; SEISMIC REFLECTION METHOD; SEISMIC WAVE PATH; STATISTICAL ANALYSIS; SYMMETRY; TESTING; TIME; TIME DEPTH DATA; TIME DOMAIN; TRACE CORRECTION; TRANSVERSE DISPERSION; TRAVEL TIME; VELOCITY CONTRAST; VERTICAL VELOCITY; WAVE; WAVE FRONT; WAVE PATTERN; WAVE PHENOMENON; WAVE PROPAGATION

Main Heading :

SEISMIC DATA PROCESSING*

Category Codes :

GEOPHYSICS

Abstract :

Some problems pertaining to seismic data processing in transversely isotropic media are addressed. An interactive traveltime analysis procedure is formulated for P-waves in delay-time, slowness domain for wave propagation in the transversely isotropic media with a vertical axis of symmetry (VTI). Using the assumption of weak anisotropy, a simple and physically intuitive two-term expression is obtained for vertical slowness, which can be used in direct estimation of **interval** elliptic velocity and the **anisotropic parameter** kappa. A method to automatically estimate these parameters is also developed using a nonlinear **inversion** technique called very fast simulated annealing. A ray tracing technique based on the Fermat's principle and perturbation theory is formulated which uses phase velocities unlike other methods, which use group velocities. Source traveltimes computed using the **interval** elliptic velocity and kappa models are used to perform prestack split-

step Fourier and Kirchhoff time migration in the VTI media. (Longer abstract available) (Original not available from T.U.)

Publication Year :

2002

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Search statement   8

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  Search statement   8
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Query/Command : his

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  File : TULSA

  SS  Results
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    3      14975  INVERSION OR INVERT
    4         50  2 AND   3
    5      21163  INTERVAL
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    7         24  4 AND   5

  Search statement   8
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Query/Command : prt ss 8 1-24 ti so ab

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The requested search statement does not exist:please enter HIS to display search his

Search statement   8
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Query/Command : his

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    2        112  (ANISOTROPY PARAMETER) OR (ANISOTROPIC PARAMETER)
    3      14975  INVERSION OR INVERT
    4         50  2 AND   3
    5      21163  INTERVAL
    6       1485  5 AND 6
    7         24  4 AND   5

  Search statement   8
```

Query/Command : prt ss 7 1-24 ti so ab

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TI - SEISMIC DATA PROCESSING IN TRANSVERSELY ISOTROPIC MEDIA: A PLANE WAVE APPROACH

SO - PHD THESIS, 2002; DISS ABSTR INT, SECT B V 64, NO 12, PP 5982-B - 5983-B, JUNE 2004 (ORDER NO DA3115507; 175 PP; ABSTRACT ONLY) (AO)

AB -

Some problems pertaining to seismic data processing in transversely isotropic media are addressed. An interactive traveltime analysis procedure is formulated for P-waves in delay-time, slowness domain for wave propagation in the transversely isotropic media with a vertical axis of symmetry (VTI). Using the assumption of weak anisotropy, a simple and physically intuitive two-term expression is obtained for vertical slowness, which can be used in direct estimation of **interval** elliptic velocity and the **anisotropic parameter** kappa. A method to automatically estimate these parameters is also developed using a nonlinear **inversion** technique called very fast simulated annealing. A ray tracing technique based on the Fermat's principle and perturbation theory is formulated which uses phase velocities unlike other methods, which use group velocities.

Source traveltimes computed using the **interval** elliptic velocity and kappa models are used to perform prestack split-step Fourier and Kirchhoff time migration in the VTI media. (Longer abstract available) (Original not available from T.U.)

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TI - STABLE ESTIMATION OF THE **INTERVAL** ANELLIPTICAL PARAMETER FOR P-WAVE PRE-STACK IMAGING

SO - 73RD ANNU SEG INT MTG (DALLAS, TX, 2003.10.26-31) EXPANDED ABSTR BIOGR V 1, PP 145-148, 2003 (PAP NO ANI 2-5; 5 REFS)

AB - In the presence of velocity anisotropy, the prestack depth imaging process needs to take the anisotropy into account in order to accurately position the seismic events in space. A reliable estimation of the **anisotropic parameter** is crucial to the success of depth imaging. Because the **anisotropic parameter** and velocity are connected, the estimation process is not trivial and is often unstable. Martinez and Lee proposed a strategy to estimate the **interval** anelliptical parameter ((eta) int) for prestack depth imaging in a VTI (transverse isotropy with a vertical symmetry) medium. As part of the strategy, (eta)int is inverted from the effective anelliptical parameter ((eta)eff) and effective velocity (Vnmo), both of which are determined by scanning the P-wave moveouts on the common-image gathers from prestack time migration. Conventionally, the **inversion** is done by the Dix equation. Because of its differential nature, the Dix equation boosts errors present in the inputs, making the output unstable. To solve the instability problem, an **inversion** approach is proposed based on damped least squares (DLS). The approach consists of a model damping goal, as well as the data fitting goal. The latter is a method to stabilize and smooth the inverted model and is fulfilled by minimizing its wiggliness. (Longer abstract available)

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TI - **ANISOTROPIC PARAMETER** ESTIMATION FROM JOINT P- AND C-WAVE DATA

SO - 72ND ANNU SEG INT MTG (SALT LAKE CITY, UT, 2002.10.06-11) EXPANDED ABSTR BIOGR V 1, PP 1045-1048, 2002 (PAP NO MC 3-4; 6 REFS)

AB - Vertical transverse isotropy (VTI) exists in many sedimentary rocks. The VTI significantly affects both focusing and positioning in seismic data. Estimating VTI parameters is a first critical step in performing anisotropic time and depth seismic data processing. This paper presents a procedure to estimate **interval** VTI parameters in multi-layered VTI media from both P- and G-wave (PS converted wave) data. First, semblance analysis is used to simultaneously scan for effective Vrms and (eta)eff from P-wave travel time. Thereafter, the paper inverts for **interval** NMO velocity (nu)nmo and **interval** (eta). The **inversion** of (eta)eff to **interval** (eta) is formulated similarly to the commonly known Dix's equation. Then, **interval** C-wave velocity (nu)c and vertical P- and S-wave velocity ratio ((gamma)0) are inverted from C-wave data.

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TI - JOINT **INVERSION** OF PP AND PS REFLECTION DATA FOR VTI (VERTICAL TRANSVERSE ISOTROPY) MEDIA: A NORTH SEA CASE STUDY

SO - GEOPHYSICS V 67, NO 5, PP 1382-1395, SEPT-OCT 2002 (26 REFS)

AB - Despite the significant advantages of combining PP and PS reflection data in **anisotropic parameter** estimation, application of this approach has been hindered by the inherent complexity of PS-wave moveout. To overcome this problem, a model-independent procedure was previously proposed to construct the traveltimes of pure SS-wave reflections from PP and PS data. Here, the method and anisotropic multicomponent stacking-velocity tomography are applied to a 2-D line acquired over the lower Tertiary Siri reservoir in the North Sea. Comparison of the vertical and NMO velocities of the PP- and SS-waves provides clear evidence of anisotropy in the section above the reservoir. The **interval** parameter estimation is performed under the assumption that the section is composed of transversely isotropic layers with a vertical symmetry axis (VTI media). Since the subsurface structure is close to horizontally layered, the reflection data cannot be uniquely inverted for the VTI parameters without more information. The parameter-estimation algorithm produces a family of equivalent VTI models that fit the PP and PS (or SS) traveltimes equally well. Although the range of variations in (epsilon) and (delta) for the equivalent models is rather wide, accurate matching of both PP and PS data is impossible without accounting for anisotropy. To overcome the nonuniqueness of the **inversion** of reflection data and build a VTI depth model, P-wave check shots are used.

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TI - **ANISOTROPIC PARAMETER** ESTIMATION FROM P- AND PS-CONVERTED WAVE DATA

SO - 64TH EAGE CONF (FLORENCE, ITALY, 2002.05.27-30) EXTENDED ABSTR V 2, POSTER NO P138, 2002 (ISBN 90-73781-20-5; 4 PP; 4 REFS)

AB - Many sedimentary rocks display transverse isotropy with a vertical symmetry axis (VTI) to seismic waves. The VTI significantly affects both focusing and positioning in seismic data. Estimating VTI parameters is the first critical step in performing anisotropic time and depth seismic data processing. A procedure is presented to estimate **interval** VTI parameters in multi-layered VTI media from both P- and PS-converted (C) wave data. First, based on an Alkhalifah's (1997) equation of P-wave travel time in VTI media, semblance analysis is used to simultaneously scan for effective Vrms and (eta)eff from P-wave travel time. Thereafter, the authors **invert** for **interval** NMO velocity vnmo and **interval** (eta). The **inversion** of (eta)eff to **interval** (eta) similar to the commonly known Dix's equation is formulated. Then, **interval** C-wave velocity vc and vertical P- and S-wave velocity ratio ((gamma)0) from C-wave data is inverted. The four inverted **interval** VTI parameters (vnmo, (eta), vc, and (gamma)0) are sufficient to build an initial multi-layered VTI model to perform anisotropic pre-stack depth migration of seismic data. Both synthetic modelling and field data are used to demonstrate the feasibility of the procedure in estimating the VTI parameters. (Longer abstract available)

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TI - REFLECTION MOVEOUT ANALYSIS AND WAVEFORM **INVERSION** IN TRANSVERSELY ISOTROPIC MEDIA

SO - 70TH ANNU SEG INT MTG (CALGARY, CANADA, 2000.08.06-11) EXPANDED ABSTR BIOGR V 2, PP 2249-2252, 2000 (PAP NO ST 2-7; 5 REFS)

AB - Seismic data have revealed widespread occurrence of anisotropy in the earth at all scales of resolution. Including the effects of anisotropy in seismic processing is important for obtaining correct images and estimating target depths. Traveltime analysis in the plane wave domain in anisotropic media is proposed. An interactive traveltime analysis procedure is developed, which results in direct estimates of **interval** elliptic velocity and an **anisotropy parameter** (kappa). The procedure is applied to a 2D seismic line from Gulf of Mexico. In order to obtain estimates of earth model parameters, a waveform **inversion** following the interactive plane wave traveltime analysis is proposed. The results from traveltime analysis are used to carefully define a model parameter space for use in the waveform **inversion**. Final results include uncertainties in different model parameters and the trade-off between some of them. (Longer abstract available)

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TI - MOVEOUT **INVERSION** OF P-WAVE DATA FOR HORIZONTAL TRANSVERSE ISOTROPY

SO - 67TH ANNU SEG INT MTG WORKSHOP (DALLAS, 1997.11.02-07) PAP; GEOPHYSICS V 64, NO 4, PP 1219-1229, JULY-AUG 1999 (17 REFS)

AB - The transversely isotropic model with a horizontal symmetry axis (HTI media) has been extensively used in seismological studies of fractured reservoirs. In this paper, a parameter-estimation technique originally developed for the more general orthorhombic media is applied to horizontal transverse isotropy. The methodology is based on the **inversion** of azimuthally-dependent P-wave normal-moveout (NMO) velocities from horizontal and dipping reflectors. If the NMO velocity of a given reflection event is plotted in each azimuthal direction, it forms an ellipse determined by 3 combinations of medium parameters. The NMO ellipse from a horizontal reflector in HTI media can be inverted for the azimuth (beta) of the symmetry axis, the vertical velocity Vp0, and the Thomsen-type **anisotropic parameter** (delta)(V). A technique for obtaining the remaining (for P-waves) **anisotropic parameter** (eta)(V) (or (epsilon)(V)) from the NMO ellipse corresponding to a dipping reflector of arbitrary azimuth is described. The **interval** parameters of vertically inhomogeneous HTI media are recovered using the generalized Dix equation that operates with NMO ellipses for horizontal and dipping events. High accuracy of the method is confirmed by inverting a synthetic multiazimuth P-wave dataset generated by ray tracing for a layered HTI medium with depth-varying orientation of the symmetry axis.

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TI - ACOUSTIC APPROXIMATIONS FOR PROCESSING IN TRANSVERSELY ISOTROPIC MEDIA

SO - GEOPHYSICS V 63, NO 2, PP 623-631, MARCH-APRIL 1998 (COLOR; 18 REFS)

AB - When transversely isotropic (VTI) media with vertical symmetry axes are characterized using the zero-dip normal moveout (NMO) velocity (Vnmo(0)) and the **anisotropy parameter** (eta) instead of Thomsen's parameters, time-related processing (moveout correction, dip moveout (DMO), and time migration) become nearly independent of the vertical P- and S-wave velocities (VP0 and VS0, respectively). The independence on VP0 and VS0 is well within the limits of seismic accuracy, even for relatively strong anisotropy. The dependency on VP0 and VS0 reduces even further as the ratio VS0/VP0 decreases. In fact, for VS0 = 0, all time-related processing depends exactly on only Vnmo(0) and (eta). This fortunate dependence on 2 parameters is demonstrated here through analytical derivations of time-related processing equations in terms of Vnmo(0) and (eta). The time-migration dispersion relation, the NMO velocity for dipping events, and the ray-tracing equations extracted by setting VS0 = 0 (i.e., by considering VTI as acoustic) not only depend solely on Vnmo(0) and (eta) but are much simpler than the counterpart expressions for elastic media.

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TI - 3D SEISMIC SURVEYING

SO - GR BRIT 2,312,281A, P 97.10.22, F 97.03.20, PR GR BRIT 96.04.15 (APPL 9,607,764) (G01V-001/28) (29 PP; 11 CLAIMS)

AB - A method for determining a representation of an anisotropic earth formation is described, wherein the **inversion** step for generating the representation from recorded seismic data is performed using several values of a pre-defined **anisotropy parameter** addition to components of the moveout velocity. The **anisotropy parameter** is preferably introduced into the moveout equation or dispersion relation, which in turn is used in the **inversion** process. A more accurate representation of earth formation can be generated.

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TI - TRANSVERSE ISOTROPY VERSUS LATERAL HETEROGENEITY IN THE **INVERSION** OF P-WAVE REFLECTION TRAVELTIMES

SO - GEOPHYSICS V 63, NO 1, PP 204-212, JAN-FEB 1998 (12 REFS)

AB - Here, the common-midpoint (CMP) moveout of a P-wave reflected from a horizontal interface beneath a weakly laterally heterogeneous medium that is also weakly transversely isotropic is represented analytically in the form similar to that in homogeneous TI media. Both the normal-moveout (NMO) velocity and the quartic moveout coefficient contain derivatives of the zero-offset traveltime t0 and the NMO velocity Vnmo with respect to the lateral coordinate. Despite the presence of heterogeneity, nonhyperbolic velocity analysis can be performed in the same way as in homogeneous TI models. If all parameters of the medium are linear functions of the lateral coordinate, heterogeneity does not influence the results of **inversion** for the **anisotropic parameter** (eta). However, to find (eta) in the case of general lateral heterogeneity, the second derivative of Vnmo and the fourth derivative of t0 are needed. Since these high-order derivatives are calculated from the data measured at discrete points by numerical differentiation, the stability of (eta) estimation is further reduced as compared to that in homogeneous TI media.

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TI - REFLECTION MOVEOUT **INVERSION** IN AZIMUTHALLY ANISOTROPIC MEDIA

SO - 67TH ANNU SEG INT MTG (DALLAS, 97.11.02-07) EXPANDED ABSTR BIOGR V 2, PP 1230-1233, 1997 (PAP NO SP6-2; 5 REFS; ABSTRACT ONLY) (AO)

AB - Using the elliptical variation of P-wave normal-moveout (NMO) velocity with azimuth, measured in 3 different source-to-receiver orientations, the vertical velocity, **anisotropy parameter**, and the azimuth (alpha) of the symmetry-axis plane in a transversely isotropic medium with a horizontal symmetry axis, is obtained. Parameter estimation from this azimuthal variation is quite sensitive to the angular separation between the survey lines. The accuracy in estimating the parameter (alpha), in particular, is also sensitive to the strength of anisotropy. In order to maximize the accuracy and stability in parameter estimation, it is best to have the azimuths for the 3 source-to-receiver directions 60(deg) apart. An azimuthally anisotropic layer overlain by an azimuthally isotropic overburden should have a relative thickness (in time) to the total thickness of at least 0.2 in order to obtain acceptable estimates of the medium parameters, provided that the azimuthal variation in the **interval** NMO velocity within the layer is ca 10% or higher. (Longer abstract available) (Original not available from T.U.)

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TI - AVO IN TRANSVERSE ISOTROPIC MEDIUM

SO - OIL GEOPHYS PROSPECTING V 32, NO 1, PP 45-56, 97.02.15 (11 REFS; IN CHINESE)

AB - Anisotropy is one of the significant factors which disturb amplitude variation with offset (AVO). The reflection and transmission coefficient expressions of plane waves in 2 elastic transversely-isotropic (TI) media under welded contact condition have been deduced by generalizing the expressions of Aki and Richards. Approximate expressions of the coefficients in weak elastic TI medium are given. The expressions have definite geophysical meaning and bring higher accuracy than others. The P-P approximate expression indicates that Thompson's **anisotropic parameter** (delta) difference between upper and lower layers plays an important role in AVO when incident angle ranges from small degrees to middle degrees, and the difference of P-wave **anisotropic parameter** (epsilon)P can have a strong influence on AVO when incident angle is above 20(deg). As far as P-P wave AVO fitting is concerned, TI does not affect zero-offset reflection coefficients, but causes direct influence on the gradient. For 3 types of isotropic gas sandstones (high impedance, near zero impedance contrast, and low impedance), the influence of TI overlying shale on P-P AVO is analyzed.

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TI - SEISMIC ANISOTROPY IN TRINIDAD: PROCESSING AND INTERPRETATION

SO - 67TH ANNU SEG INT MTG (DALLAS, 97.11.02-07) EXPANDED ABSTR BIOGR V 1, PP 692-695, 1997 (PAP NO INT6 2; 6 REFS; ABSTRACT ONLY)

(AO)

AB - The lithology of offshore Trinidad is formed of alternating sequences of sand and shale dominated layers. Average (effective) anisotropy is much lower in Trinidad compared to Angola due to the large amount of sand in the subsurface. Nevertheless, accounting for anisotropy in seismic processing results in improved imaging of structural and stratigraphic features. The imaging improvement is shown for 2 different lines from that region. **Inversion** for an **interval** value of the **anisotropy parameter** ((eta)) suggests that low values are correlated with sands (or any other isotropic material), while high **interval** (eta) values are correlated with shales. Correlation between separate independent measurements for (eta) across common midpoints enhances the credibility of such estimates as a representation of real geologic parameters. Finally, the (eta) curve agrees well with gamma-ray well-log measurements used as a shale estimate. This result confirms the hypothesis that anisotropy is due to shales in the subsurface, and the **inversion** for **interval** (eta) can subsequently be used to predict lithology. (Longer abstract available) (Original not available from T.U.)

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TI - P-WAVE REFLECTION COEFFICIENTS FOR TRANSVERSELY ISOTROPIC MODELS WITH VERTICAL AND HORIZONTAL AXIS OF SYMMETRY

SO - 65TH ANNU SEG INT MTG (HOUSTON, 95.10.08-13) PAP; GEOPHYSICS V 62, NO 3, PP 713-722, MAY-JUNE 1997 (29 REFS)

AB - The study of P-wave reflection coefficients in anisotropic media is important for amplitude variation with offset (AVO) analysis. While numerical evaluation of the reflection coefficient is straightforward, numerical solutions do not provide analytic insight into the influence of anisotropy on the AVO signature. To overcome this difficulty, an improved approximation for P-wave reflection coefficients at a horizontal boundary is presented in transversely isotropic media with vertical axis of symmetry (VTI media). This solution has the same AVO-gradient term describing the low-order angular variation of the reflection coefficient as the equations published previously, but is more accurate for large incidence angles. The refined approximation is then extended to transverse isotropy with a horizontal axis of symmetry (HTI), which is caused typically by a system of vertical cracks. Comparison of the approximate reflection coefficients for P-waves incident in the 2 vertical symmetry planes of HTI media indicates that the azimuthal variation of the AVO gradient is a function of the shear- wave splitting parameter (gamma), and the **anisotropy parameter** describing P-wave anisotropy for near-vertical propagation in the vertical plane containing the symmetry axis.

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TI - ANISOTROPY DETERMINATION FROM SURFACE SEISMIC DATA ON A CASE STUDY

SO - 66TH ANNU SEG INT MTG (DENVER, 96.11.10-15) EXPANDED ABSTR BIOGR V 2, PP 1858-1861, 1996 (PAP NO SL 5-6; 7 REFS; ABSTRACT ONLY) (AO)

AB - The observation of misties between well markers and the corresponding seismic horizons positioned in depth using velocities determined from standard analysis of the surface seismic data is often an indication of effective anisotropy. In such cases, in general, 2 problems are faced in producing a depth image which is consistent with both datasets: (1) defining a model of the anisotropy (e.g., elliptical, transverse isotropy with a vertical axis) and estimating values for the model parameters (Vp0, (delta) and (xi)) and (2) using a processing sequence which respects the derived **anisotropy parameter** values. The improvement in well ties and associated changes in the imaging for this methodology are shown in comparison with standard processing results on a case study from the North Sea Central Graben. Assumed elliptical anisotropy and estimated parameters by stacking velocity **inversion** use the well markers as constraints. (Longer abstract available) (Original article not available from T.U.)

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16 / 24 TULSA - ©TULS

TI - TRANSVERSE ISOTROPY VERSUS LATERAL HETEROGENEITY IN **INVERSION** OF P-WAVE REFLECTION TRAVELTIMES

SO - 66TH ANNU SEG INT MTG (DENVER, 96.11.10-15) EXPANDED ABSTR BIOGR V 2, PP 1503-1506, 1996 (PAP NO PR 3-5; 10 REFS; ABSTRACT ONLY) (AO)

AB - Transverse isotropy causes pronounced nonhyperbolicity of long-spread P-wave reflection moveouts. Lateral heterogeneity may affect the moveouts in much the same way as transverse isotropy. For this reason, a given P-wave reflection moveout may be interpreted equally well in terms of parameters of homogeneous transversely-isotropic (TI) or laterally heterogeneous (LH) isotropic models. In weakly laterally heterogeneous transversely-isotropic media, both the normal-moveout (NMO) velocity and the coefficient of the quartic moveout term are affected by lateral heterogeneity. If reflections from 2 dipping interfaces are available, the dip-moveout (DMO) **inversion** method can be used to extract the **anisotropic parameter**, (eta). Although (eta) is compromised again by lateral heterogeneity, it contributes the most to the deviation of angular dependence of the NMO velocity from that expected in isotropic homogeneous media and therefore can be estimated from DMO signatures. (Longer abstract available) (Original article not available from T.U.)

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17 / 24 TULSA - ©TULS

TI - TI (TRANSVERSELY ISOTROPIC) MIGRATION-VELOCITY BASED ON LINEARIZED **INVERSION**

SO - 66TH ANNU SEG INT MTG (DENVER, 96.11.10-15) EXPANDED ABSTR BIOGR V 1, PP 475-478, 1996 (PAP NO MIG 3-3; 1 REF; ABSTRACT ONLY) (AO)

AB - A knowledge of the background velocity model is crucial in achieving accurate reservoir description now expected from seismic imaging and **inversion**. Conventional methods for reconstructing the background velocity model, like migration-velocity methods, often assume an isotropic subsurface and can yield to inaccurate reservoir descriptions when the subsurface contains rock formations which respond to seismic wave propagation as anisotropic materials. Here, the migration-velocity is generalized by (1) replacing migration with linearized

inversion and (2) permitting the background velocity to be transversely isotropic with respect to the vertical axis. The scheme consists of scanning sequentially over 2 parameters: normal moveout velocity and the **anisotropic parameter** known as anellipticity. Appropriate choices of covariance operators in the linearized **inversion** allow improving the piking from inverted results. (Longer abstract available) (Original article not available from T.U.)

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18 / 24 TULSA - ©TULS

TI - ANISOTROPIC MIGRATION-VELOCITY BASED ON **INVERSION** OF COMMON AZIMUTHAL SECTIONS

SO - J GEOPHYS RES V 101, NO B10, PP 22461-22484, 96.10.10 (27 REFS)

AB - A knowledge of the background velocity model is crucial to achieve the accurate reservoir description now expected from 3-D prestack imaging and **inversion**. Conventional methods for reconstructing the background velocity model, like migration-velocity methods, often assume an isotropic subsurface and can yield inaccurate reservoir descriptions when the subsurface contains anisotropic rock formations. The migration-velocity concept is generalized by (1) replacing migration with linearized **inversion**, and (2) permitting the background velocity to be anisotropic. The scheme consists of scanning different anisotropic velocity models using a linearized **inversion** in the (omega)-k domain. Common azimuthal sections are worked with. For a given common azimuthal section, 2 parameters, normal move- out velocity and the **anisotropic parameter** known as anellipticity, are scanned sequentially. These 2 scans allow an azimuthally isotropic velocity model to be reconstructed.

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19 / 24 TULSA - ©TULS

TI - ANISOTROPY PROCESSING IN VERTICALLY INHOMOGENEOUS MEDIA

SO - 58TH EAGE CONF (AMSTERDAM, NETH, 96.06.03-07) EXTENDED ABSTR V 1, PAP NO X042, 1996 (ISBN 90-73781-07-8; 2 PP; 2 REFS; ABSTRACT ONLY) (AO)

AB - Existing work on anisotropic traveltime **inversion** of reflection data has been done for laterally homogeneous subsurface models. These inversions, although providing useful information on anisotropy in the subsurface, either use the weak-anisotropy approximation or require P-wave data to be supplemented by additional information. One reason for the limitations associated with these algorithms is the number of parameters needed to be estimated in transversely isotropic (TI) media. However, Alkhalifah and Tsvankin (1995) showed that time-related processing for P- waves, including dip-moveout correction and time migration, in TI media with a vertical symmetry axis (VTI media) depends just on 2 parameters: the zero-dip NMO (normal moveout) velocity, and an **anisotropy parameter** (eta) that is a special combination of Thomsen's (1986) parameters. Their **inversion** procedure makes it possible to obtain (eta) and reconstruct the NMO velocity as a function of ray parameter using moveout velocities for reflections from interfaces with 2 different dips. (Longer abstract available) (Original article not available from T.U.)

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20 / 24 *TULSA - ©TULS*

TI - FOWLER DMO (DIP-MOVEOUT) AND TIME MIGRATION FOR TRANSVERSELY ISOTROPIC MEDIA

SO - 64TH ANNU SEG INT MTG (LOS ANGELES, 94.10.23-28) PAP; GEOPHYSICS V 61, NO 3, PP 835-844, MAY-JUNE 1996 (17 REFS)

AB - The main advantage of Fowler's DMO method is the ability to perform velocity analysis along with the DMO removal. This feature of Fowler DMO becomes even more attractive in anisotropic media, where imaging methods are hampered by the difficulty in reconstructing the velocity field from surface data. A Fowler-type DMO algorithm has been devised for transversely isotropic media using the analytic expression for normal-moveout velocity. The parameter- estimation procedure is based on the results of Alkhalifah and Tsvankin showing that, in transversely isotropic media with a vertical axis of symmetry, the P-wave normal-moveout (NMO) velocity as a function of ray parameter can be described fully by just 2 coefficients: the zero-dip NMO velocity Vnmo(0) and the **anisotropic parameter** (eta) ((eta) reduces to the difference between Thomsen parameters (epsilon) and (delta) in the limit of weak anisotropy). In this extension of Fowler DMO, resampling in the frequency- wavenumber domain makes it possible to obtain the values of Vnmo(0) and (eta) by inspecting zero-offset (stacked) panels for different pairs of the 2 parameters.

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21 / 24 *TULSA - ©TULS*

TI - **INVERSION** OF MOVEOUT VELOCITIES FOR HORIZONTAL TRANSVERSE ISOTROPY

SO - 65TH ANNU SEG INT MTG (HOUSTON, 95.10.08-13) EXPANDED TECH PROGRAM ABSTR BIOGR PP 735-738, 1995 (PAP NO PP6 10; 9 REFS; ABSTRACT ONLY) (AO)

AB - An exact equation for normal-moveout (NMO) velocities from horizontal reflectors in HTI media is applied to **invert** moveout data for the anisotropic parameters. The aximuthally dependent NMO velocity of P-waves that can be obtained from 3-D surveys provides enough information to determine the principal direction of the anisotropy (crack orientation) and the P-wave vertical velocity, as well as an effective **anisotropic parameter** equivalent to Thomsen's coefficient (delta). An important parameter of fracture systems is the crack density that is usually estimated through the traveltimes or reflection amplitudes of the split shear waves at vertical incidence. The formalism makes it possible to obtain the crack density using the NMO velocities of P and shear waves from horizontal reflectors. Furthermore, P-wave data alone (combined with an estimate of one of the shear-wave vertical velocities) are sufficient to find the crack density if either the P-wave velocity along the symmetry direction is known or dipping events are available. (Longer abstract available) (Original article not available from T.U.)

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22 / 24 *TULSA - ©TULS*

TI - WAVE PROPAGATION IN RANDOM MEDIA

SO -
MODELING THE EARTH FOR OIL EXPLORATION PP 317-415
PERGAMON PRESS INC, TARRYTOWN, NY, 1994 (ISBN 0-08-042419-8; 16

COLOR PLATES; OVER 40 REFS)

AB - PARAMETERIZATIONS FOR GENERATING GEOLOGICALLY RELEVANT RANDOM MODELS IN ONE OR MORE DIMENSIONS ARE CONSIDERED. IN ONE DIMENSION THE AUTOREGRESSIVE MOVING AVERAGE PARADIGM APPEARS REASONABLY WELL SUITED TO DESCRIBING REFLECTIVITY SERIES. HIGHER DIMENSIONALITIES ARE DESCRIBED USING SPATIAL CORRELATION FUNCTIONS OF THE MEDIUM PROPERTIES. A HIGH- ORDER FINITE DIFFERENCE 2-D MODELING SCHEME IS EFFICIENT AS WELL AS ACCURATE. A METHOD OF SEPARATING COHERENT AND INCOHERENT COMPONENTS IS PRESENTED. AMPLITUDE TOMOGRAPHY RELIES STRONGLY UPON INITIAL ACCURATE ESTIMATION OF THE VELOCITY FIELD, SINCE GEOMETRIC SPREADING EFFECTS MAY OVERWHELM THOSE OF THE ATTENUATION. TRAVELTIME TOMOGRAPHY IS EXTENDED TO ALLOW (AND IMAGE) TRANSVERSE ISOTROPY WITH A VERTICAL SYMMETRY AXIS; SYNTHETIC STUDIES SHOW THAT AT LEAST ONE **ANISOTROPY PARAMETER** MAY BE RECOVERED, BUT AT SOME LOSS OF RESOLUTION. THE METHOD IS APPLIED TO A REAL CROSSHOLE DATASET AND THE RESULT PARTIALLY VALIDATED BY LOG AND LAB DATA.

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23 / 24 TULSA - ©TULS

TI - DETERMINING THE ELASTIC CONSTANTS OF ANISOTROPIC MATERIALS FROM P-WAVES

SO - 64TH ANNU SEG INT MTG (LOS ANGELES, 94.10.23-28) EXPANDED TECH PROGRAM ABSTR BIOGR PP 937-941, 1994 (PAP NO SI1 2; 3 REFS; ABSTRACT ONLY) (AO)

AB - A LEAST SQUARES ITERATIVE BASED **INVERSION** TECHNIQUE HAS BEEN DEVELOPED FOR THE DETERMINATION OF THE ELASTIC PARAMETER (DELTA)* OF ANY ANISOTROPIC MODELING MATERIAL IN THE LABORATORY. FOR MOST APPLICATIONS IN PETROLEUM GEOPHYSICS, THE ELASTIC PARAMETER (DELTA)* IS VERY IMPORTANT AND IS THE CRUCIAL **ANISOTROPIC PARAMETER** FOR NEAR-VERTICAL P-WAVE PROPAGATION. DESPITE THE POTENTIAL IMPORTANCE OF (DELTA)* IN SEISMIC EXPLORATION AND FOR RESOLUTION IN AN ANISOTROPIC MEDIUM, THE CONVENTIONAL PROCEDURES ADOPTED IN ESTIMATING ITS VALUE UNFORTUNATELY ARE FACED WITH MANY AMBIGUITIES AND THE RELIABILITY OF ITS MEASUREMENT REMAINS DOUBTFUL. THE ANISOTROPIC INVERSE MODELING TECHNIQUE IS EXACT. IN ORDER TO OPTIMIZE THE ACCURACY OF THE RESULTS, ANALYTICAL RATHER THAN NUMERICAL DIFFERENTIATIONS WERE IMPLEMENTED AND THE MODELING PROCEDURES ALLOW FOR CONTROLLED ITERATIVE ADJUSTMENTS IN RESOLVING THE PARAMETER (DELTA)*. THE **INVERSION** RESULTS HAVE BEEN FOUND TO BE STABLE AND CONVERGENT AND THEY ALSO HIGHLIGHT THE NEED FOR GOOD ANGULAR COVERAGE IN ORDER TO DETERMINE THE ANISOTROPY PARAMETERS IN MATERIALS SUSPECTED OF BEING ANISOTROPIC. (LONGER ABSTRACT

AVAILABLE) (ORIGINAL ARTICLE NOT AVAILABLE FROM T.U.)

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24 / 24 TULSA - ©TULS

TI - AVO (AMPLITUDE VS. OFFSET) AT A MULTILAYERED BOREHOLE TEST SITE

SO - 56TH EAEG MTG (VIENNA, AUSTRIA, 94.06.06-10) EXTENDED ABSTR PAP NO P023 1994 (ISBN 90-73781-05-1; 2 PP; 5 REFS; ABSTRACT ONLY) (AO)

AB - THE IMPERIAL COLLEGE BOREHOLE TEST SITE IN NORTHUMBERLAND, ENGLAND, IS CHARACTERIZED BY HORIZONTALLY LAYERED CYCLIC SEQUENCE OF SANDSTONES, SHALES AND CARBONATES OF THE NAMURIAN UPPER LIMESTONE GROUP. THE SET OF MULTI-OFFSET VSP DATA ACQUIRED FROM THE TEST SITE USING A BOLT LAND AIR GUN AND DOWN-HOLE 3-COMPONENT CLAMPED GEOPHONES, CONTAINED BOTH P AND SV WAVES GENERATED FROM THE SOURCE. THE GUN WAS FIRED AT 12 OFFSETS BETWEEN 0 AND 200 M AND DOWN-HOLE DATA WERE RECORDED FROM 60 TO 200 M DEPTH AT 2-M INTERVALS. THE DOMINANT FREQUENCY OF DATASET WAS 50 TO 100 HZ. THE RADIATION PATTERNS OF THE DIRECT P AND SV PHASES WERE CONSISTENT WITH THE THEORETICAL PREDICTIONS USING A SURFACE VERTICAL POINT FORCE SOURCE. TRAVEL-TIME **INVERSION** OF THESE DATA, ASSUMING VERTICAL TRANSVERSE ISOTROPY (TIV) AND USING EXACT EQUATIONS FOR GROUP VELOCITIES, SHOWED THAT THE INTRINSIC COMPONENT OF THE **ANISOTROPY PARAMETER** (EPSILON) AT THESE LOW FREQUENCIES WAS CONSISTENT WITH THE LABORATORY MEASUREMENTS ON PRESERVED CORE SAMPLES. VALUES OF (DELTA) ARE NOT AVAILABLE FROM CORE MEASUREMENTS AND THOSE FROM THE **INVERSION** DID NOT AGREE WITH THE ESTIMATES FROM BACKUS AVERAGING FOR MOST OF THE DEPTH INTERVALS. (LONGER ABSTRACT AVAILABLE) (ORIGINAL ARTICLE NOT AVAILABLE FROM T.U.)

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Search statement   8
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Query/Command : prt ss 7 1-24 au

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1 / 24 TULSA - ©TULS

AU - MUKHERJEE, A

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2 / 24 TULSA - ©TULS

AU - REN, J; LEE, S; MARTINEZ, R D

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3 / 24 TULSA - ©TULS

AU - LOU, M; PHAM, L D; WILLIS, J

4 / 24 TULSA - ©TULS

AU - GRECHKA, V; BAKULIN, A; TSVANKIN, I; HANSEN, J O; SIGNER, C

5 / 24 TULSA - ©TULS

AU - LOU, M; PHAM, L D; LEE, S

6 / 24 TULSA - ©TULS

AU - SEN, M K; MUKHERJEE, A

7 / 24 TULSA - ©TULS

AU - CONTRERAS, P; GRECHKA, V; TSVANKIN, I

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AU - ALKHALIFAH, T

9 / 24 TULSA - ©TULS

AU - IKELLE, L T

10 / 24 TULSA - ©TULS

AU - GRECHKA, V Y

11 / 24 TULSA - ©TULS

AU - AL-DAJANI, A F; ALKHALIFAH, T

12 / 24 TULSA - ©TULS

AU - XUN, H; DONG, M; MOU, Y

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AU - ALKHALIFAH, T; RAMPTON, D

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AU - RUGER, A

15 / 24 TULSA - ©TULS

AU - BERTHET, P; LAFOND, C; WILLIAMSON, P

16 / 24 TULSA - ©TULS

AU - GRECHKA, V; COHEN, J K

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AU - IKELLE, L T; NORDBERG, H

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18 / 24 TULSA - ©TULS

AU - IKELLE, L T

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19 / 24 TULSA - ©TULS

AU - ALKHALIFAH, T A

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20 / 24 TULSA - ©TULS

AU - ANDERSON, J; ALKHALIFAH, T; TSVANKIN, I

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21 / 24 TULSA - ©TULS

AU - TSVANKIN, I

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22 / 24 TULSA - ©TULS

AU - WORTHINGTON, M; PRATT, R G; WILLIAMSON, P R; HARRIS, P E; WHITE, R E; HUBRAL, P; KERNER, C; KNEIB, G; SHAPIRO, S A

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23 / 24 TULSA - ©TULS

AU - OKOYE, P N; ZHAO, P; UREN, N F

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24 / 24 TULSA - ©TULS

AU - ABRAHAM, J; THOMAS-BETTS, A

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Search statement   8
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Query/Command : damped least squares inversion

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  Frequency   Term
       258   DAMPED
     27056   LEAST
      5503   SQUARES
     14565   INVERSION
```

**** SS 8: Results 11**

Search statement 9

Query/Command : conjugate gradients and inversion

Frequency	Term
971	CONJUGATE
3826	GRADIENTS
14565	INVERSION

**** SS 9: Results 23**

Search statement 10

Query/Command : his

File : TULSA

SS	Results	
1	10319	ANISOTROPY OR ANISOTROPIC
2	112	(ANISOTROPY PARAMETER) OR (ANISOTROPIC PARAMETER)
3	14975	INVERSION OR INVERT
4	50	2 AND 3
5	21163	INTERVAL
6	1485	5 AND 6
7	24	4 AND 5
8	11	DAMPED LEAST SQUARES INVERSION
9	23	CONJUGATE GRADIENTS AND INVERSION

Search statement 10

Query/Command : 7 and (8 or 9)

** SS 10: Results 0

Search statement 11

Query/Command : his

File : TULSA

SS	Results	
1	10319	ANISOTROPY OR ANISOTROPIC
2	112	(ANISOTROPY PARAMETER) OR (ANISOTROPIC PARAMETER)
3	14975	INVERSION OR INVERT
4	50	2 AND 3
5	21163	INTERVAL
6	1485	5 AND 6

7	24	4 AND 5
8	11	DAMPED LEAST SQUARES INVERSION
9	23	CONJUGATE GRADIENTS AND INVERSION
10	0	7 AND (8 OR 9)

Search statement 11

Query/Command : prt ss 8 1-11 ti au

1/11 TULSA - ©TULS

TI - STABLE ESTIMATION OF INTERVAL PARAMETERS FOR P-WAVE PRE-STACK IMAGING IN VTI MEDIA

AU - REN, J; LEE, S; MARTINEZ, R D

2/11 TULSA - ©TULS

TI - CRUSTAL VELOCITY STRUCTURE FROM SAREX, THE SOUTHERN ALBERTA REFRACTION EXPERIMENT

AU - CLOWES, R M; BURIANYK, M J A; GORMAN, A R; KANASEWICH, E R

3/11 TULSA - ©TULS

TI - THREE-DIMENSIONAL GRAVITY INVERSION USING SIMULATED ANNEALING: CONSTRAINTS ON THE DIAPIRIC ROOTS OF ALLOCHTHONOUS SALT STRUCTURES

AU - NAGIHARA, S; HALL, S A

4/11 TULSA - ©TULS

TI - SMOOTH INVERSION OF VSP (VERTICAL SEISMIC PROFILING) TRAVELTIME DATA

AU - LIZARRALDE, D; SWIFT, S

5/11 TULSA - ©TULS

TI - P-SV REFLECTION COEFFICIENT APPROXIMATION USING SHEAR MODULUS AND ITS SIGNIFICANCE IN MULTIWAVE AVO INVERSION

AU - YANG, H; YIN, K

6/11 TULSA - ©TULS

TI - COMPOSITE DISTRIBUTION INVERSION APPLIED TO CROSSHOLE TOMOGRAPHY

AU - CLIPPARD, J D; CHRISTENSEN, D H; RECHTIEN, R D

7/11 TULSA - ©TULS

TI - LITHOSPHERIC MAGNETIC PROPERTY CONTRASTS WITHIN THE

SOUTH AMERICAN PLATE DERIVED FROM **DAMPED LEAST-SQUARES INVERSION** OF SATELLITE MAGNETIC DATA.

AU - RAVAT, D N; HINZE, W J; VON FRESE, R R B

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8 / 11 TULSA - ©TULS

TI - **DAMPED LEAST-SQUARES INVERSION** OF TIME-DOMAIN AIRBORNE EM (ELECTROMAGNETIC) DATA BASED ON SINGULAR VALUE DECOMPOSITION

AU - HUANG, H; PALACKY, G J

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9 / 11 TULSA - ©TULS

TI - COMPARISON OF A FEW **DAMPED LEAST-SQUARES INVERSION** ALGORITHMS

AU - MORGAN, F D; WURMSTICH, B

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10 / 11 TULSA - ©TULS

TI - THREE-DIMENSIONAL DETERMINATION OF STRUCTURE AND VELOCITY BY SEISMIC TOMOGRAPHY

AU - CHIU, S K L; KANASEWICH, E R; PHADKE, S

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11 / 11 TULSA - ©TULS

TI - COMPRESSIONAL WAVE VELOCITY STRUCTURE OF THE UPPER 350 KM UNDER THE EASTERN SNAKE RIVER PLAIN NEAR REXBURG, IDAHO

AU - EVANS, J R

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Search statement  11
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Query/Command : prt ss 8 1-23 ti au

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1 / 11 TULSA - ©TULS

TI - STABLE ESTIMATION OF INTERVAL PARAMETERS FOR P-WAVE PRE-STACK IMAGING IN VTI MEDIA

AU - REN, J; LEE, S; MARTINEZ, R D

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2 / 11 TULSA - ©TULS

TI - CRUSTAL VELOCITY STRUCTURE FROM SAREX, THE SOUTHERN ALBERTA REFRACTION EXPERIMENT

AU - CLOWES, R M; BURIANYK, M J A; GORMAN, A R; KANASEWICH, E R

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3 / 11 TULSA - ©TULS

TI - THREE-DIMENSIONAL GRAVITY INVERSION USING SIMULATED

ANNEALING: CONSTRAINTS ON THE DIAPIRIC ROOTS OF ALLOCHTHONOUS SALT STRUCTURES

AU - NAGIHARA, S; HALL, S A

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4 / 11 TULSA - ©TULS

TI - SMOOTH INVERSION OF VSP (VERTICAL SEISMIC PROFILING) TRAVELTIME DATA

AU - LIZARRALDE, D; SWIFT, S

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5 / 11 TULSA - ©TULS

TI - P-SV REFLECTION COEFFICIENT APPROXIMATION USING SHEAR MODULUS AND ITS SIGNIFICANCE IN MULTIWAVE AVO INVERSION

AU - YANG, H; YIN, K

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TI - COMPOSITE DISTRIBUTION INVERSION APPLIED TO CROSSHOLE TOMOGRAPHY

AU - CLIPPARD, J D; CHRISTENSEN, D H; RECHTIEN, R D

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7 / 11 TULSA - ©TULS

TI - LITHOSPHERIC MAGNETIC PROPERTY CONTRASTS WITHIN THE SOUTH AMERICAN PLATE DERIVED FROM **DAMPED LEAST-SQUARES INVERSION** OF SATELLITE MAGNETIC DATA

AU - RAVAT, D N; HINZE, W J; VON FRESE, R R B

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8 / 11 TULSA - ©TULS

TI - **DAMPED LEAST-SQUARES INVERSION** OF TIME-DOMAIN AIRBORNE EM (ELECTROMAGNETIC) DATA BASED ON SINGULAR VALUE DECOMPOSITION

AU - HUANG, H; PALACKY, G J

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9 / 11 TULSA - ©TULS

TI - COMPARISON OF A FEW **DAMPED LEAST-SQUARES INVERSION** ALGORITHMS

AU - MORGAN, F D; WURMSTICH, B

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10 / 11 TULSA - ©TULS

TI - THREE-DIMENSIONAL DETERMINATION OF STRUCTURE AND VELOCITY BY SEISMIC TOMOGRAPHY

AU - CHIU, S K L; KANASEWICH, E R; PHADKE, S

11 / 11 TULSA - ©TULS

TI - COMPRESSIONAL WAVE VELOCITY STRUCTURE OF THE UPPER 350 KM UNDER THE EASTERN SNAKE RIVER PLAIN NEAR REXBURG, IDAHO

AU - EVANS, J R

Search statement 11

Query/Command : prt ss 8 1 fu

1 / 11 TULSA - ©TULS

AN - 845596

TI - STABLE ESTIMATION OF INTERVAL PARAMETERS FOR P-WAVE PRE-STACK IMAGING IN VTI MEDIA

AU - REN, J; LEE, S; MARTINEZ, R D

OS - PGS MARINE GEOPHYSICAL

SO - 66TH EAGE CONF (PARIS, FRANCE, 2004.06.07-10) EXTENDED ABSTR PAP NO D047, 2004 (ISBN 90-73781-33-7; AVAILABLE ON CD-ROM; COLOR; 4 PP; 4 REFS)

NU - ISBN 9073781337

LA - ENGLISH; (ENG)

DT - (A) MEETING PAPER ABSTRACT

IT - IMAGING*; ANISOTROPY*; CALCULATING*; COMPRESSIONAL WAVE VELOCIT*; INTERVAL VELOCITY*; ISOTROPY*; MATHEMATICAL ANALYSIS*; MATHEMATICS*; NUMERICAL INVERSION*; SEISMIC VELOCITY*; SEISMIC VELOCITY COMPUTATN*; VELOCITY*; VELOCITY ANISOTROPY*; WAVE VELOCITY*; CHANGE; DATA IMPROVEMENT; DATA PROCESSING; IMAGE ENHANCEMENT; IMPROVEMENT; LEAST SQUARES; MODEL; MOVEOUT; NORMAL MOVEOUT; PARAMETER; SEISMIC DATA PROCESSING; STATISTICAL ANALYSIS; VELOCITY MODEL

MH - IMAGING*

CC - GEOPHYSICS

AB - This paper estimates interval velocities and anelliptical parameters for P-wave imaging in VTI media using prestack time migration. Effective velocities and anelliptical parameters are first determined by simultaneous scanning and semblance analysis applied to common-image gathers from prestack time migration for V(z) and VTI media. The effective parameters are then converted into interval parameters by an inversion based on damped least squares. This time-domain estimation process is stable and robust. Specifically, the **damped-least-squares inversion** works much better than the Dix equation for the parameter conversion and benefits the stability of the process. Combined with vertical velocities derived from well information, the parameters estimated can serve as a reliable initial model for anisotropic depth imaging. They can also be updated subsequently in the depth domain. (Longer abstract available)

PY - 2004

Search statement 11

Query/Command : his

File : TULSA

SS	Results	
1	10319	ANISOTROPY OR ANISOTROPIC
2	112	(ANISOTROPY PARAMETER) OR (ANISOTROPIC PARAMETER)
3	14975	INVERSION OR INVERT
4	50	2 AND 3
5	21163	INTERVAL
6	1485	5 AND 6
7	24	4 AND 5
8	11	DAMPED LEAST SQUARES INVERSION
9	23	CONJUGATE GRADIENTS AND INVERSION
10	0	7 AND (8 OR 9)

Search statement 11